

What is claimed is:

1. An oscillator device comprising:

an oscillator having a vibrating prong and  
a base portion with a first reference portion;

5 a package;

a mounting base with a second reference  
portion provided inside said package; and

10 a bonding material for fixing said  
oscillator to said mounting base by aligning said first  
reference portion with said second reference portion by  
utilizing a self-alignment effect occurring due to  
surface tension.

15 2. The oscillator device according to claim 1,  
wherein said first reference portion has three straight  
line portions defining an outer shape of said base  
portion, and said second reference portion has three  
straight line portions corresponding in position to said  
three straight line portions that constitute said first  
reference portion.

20 3. The oscillator device according to claim 2,  
wherein one of said three straight line portions  
constituting said second reference portion is a contact  
line between an inside wall of said package and said  
mounting base.

25 4. The oscillator device according to claim 1,  
wherein said first reference portion has two side wall  
faces defining an outer shape of said oscillator, and  
said second reference portion has two bonding faces  
corresponding to said two side wall faces.

30 5. The oscillator device according to claim 1,  
wherein said mounting base is formed from a group of a  
plurality of projections.

35 6. The oscillator device according to claim 1,  
wherein said first reference portion has a plurality of  
sets of three straight line portions defining an outer  
shape of said base portion, and said second reference  
portion has a plurality of sets of three straight line

portions corresponding in position to said three straight line portions in each of said plurality of sets constituting said first reference portion.

7. The oscillator device according to claim 1,  
5 wherein said first reference portion has three straight line portions defining an outer shape of said oscillator, said second reference portion has two straight line portions corresponding in position to at least two of said straight line portions constituting said first reference portion, and an inside wall of said package has a bonding face corresponding to at least one of said straight line portions constituting said first reference portion.  
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8. The oscillator device according to claim 7,  
15 wherein a recess is formed in said bonding face.

9. The oscillator device according to claim 7,  
wherein a recess is formed in the inside wall of said package.

10. The oscillator device according to claim 7,  
20 wherein width (W) of said base portion and width (Wd) of said mounting base satisfy the relation  $0.86W < Wd < 1.16W$ .

11. The oscillator device according to claim 9,  
25 wherein the width of said base portion is substantially equal to the width of said mounting base.

12. The oscillator device according to claim 7,  
wherein said package has a recess, and said mounting base is provided inside said recess.

13. The oscillator device according to claim 12,  
30 further comprises a wiring portion provided inside said recess and connecting to said oscillator, and a groove, formed between said wiring portion and said mounting base, for storing a spillover of said bonding material.

14. The oscillator device according to claim 7,  
35 wherein said package is a ceramic package.

15. The oscillator device according to claim 1,  
wherein said first reference portion has a plurality of

grooves formed in parallel and extending in a first direction, and said second reference portion has a plurality of grooves formed in parallel and extending substantially in said first direction.

5        16. The oscillator device according to claim 15, wherein the number of grooves formed in said first reference portion is equal to the number of grooves formed in said second reference portion.

10      17. The oscillator device according to claim 1, wherein said oscillator is a crystal plate.

18. A method for manufacturing an oscillator device, comprising the steps of:

      forming an oscillator having a vibrating prong and a base portion with a first reference portion;

15      forming a package having a mounting base with a second reference portion;

      placing said oscillator on said mounting base by aligning said first reference portion with said second reference portion by utilizing a self-alignment effect occurring due to surface tension of a bonding material; and

      hardening said bonding material.

19. The method for manufacturing an oscillator device according to claim 18, wherein said first reference portion is formed so as to have three straight line portions defining an outer shape of said base portion, and

      said second reference portion is formed so as to have three straight line portions corresponding in position to said three straight line portions that constitute said first reference portion.

20. The method for manufacturing an oscillator device according to claim 19, wherein one of said three straight line portions constituting said second reference portion is a contact line between an inside wall of said package and said mounting base.

21. The method for manufacturing an oscillator

device according to claim 18, wherein said first reference portion is formed so as to have two side wall faces defining an outer shape of said oscillator, and  
5                   said second reference portion is formed so as to have two bonding faces corresponding to said two side wall faces.

22. The method for manufacturing an oscillator device according to claim 18, wherein said mounting base is formed from a group of a plurality of projections.  
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23. The method for manufacturing an oscillator device according to claim 18, wherein said first reference portion is formed so as to have a plurality of sets of three straight line portions defining an outer shape of said base portion, and  
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                      said second reference portion is formed so as to have a plurality of sets of three straight line portions corresponding in position to said three straight line portions in each of said plurality of sets constituting said first reference portion.  
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24. The method for manufacturing an oscillator device according to claim 18, wherein said oscillator is formed by etching.  
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25. The method for manufacturing an oscillator device according to claim 18, wherein said mounting base is formed integrally with said package.  
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26. The method for manufacturing an oscillator device according to claim 18, wherein said first reference portion is formed so as to have three straight line portions defining an outer shape of said crystal plate, and  
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                      said second reference portion is formed so as to have two straight line portions corresponding in position to at least two of said straight line portions constituting said first reference portion, while an inside wall of said package is formed so as to have a bonding face corresponding to at least one of said straight line portions constituting said first reference

portion.

27. The method for manufacturing an oscillator device according to claim 26, wherein said bonding face is formed so as to have a recess.

5 28. The method for manufacturing an oscillator device according to claim 26, wherein the inside wall of said package is formed so as to have a recess.

10 29. The method for manufacturing an oscillator device according to claim 26, wherein width (w) of said base portion and width (wd) of said mounting base satisfy the relation  $0.86W < Wd < 1.16W$ .

15 30. The method for manufacturing an oscillator device according to claim 29, wherein said base portion is formed so as to have a width substantially equal to the width of said mounting base.

31. The method for manufacturing an oscillator device according to claim 26, wherein said package is formed to have a recess, and said mounting base is formed inside said recess.

20 32. The method for manufacturing an oscillator device according to claim 31, wherein said package is formed so as to have a wiring portion inside said recess for connecting to said crystal plate and also have a groove, formed between said wiring portion and said mounting base, for storing a spillover of said bonding material.

25 33. The method for manufacturing an oscillator device according to claim 26, wherein said package is a ceramic package.

30 34. The method for manufacturing an oscillator device according to claim 18, wherein said first reference portion is formed so as to have a plurality of grooves formed in parallel and extending in a first direction, and

35                   said second reference portion is formed so as to have a plurality of grooves formed in parallel and extending substantially in said first direction.

35. The method for manufacturing an oscillator device according to claim 34, wherein the number of grooves formed in said first reference portion is equal to the number of grooves formed in said second reference portion.

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36. The method for manufacturing an oscillator device according to claim 18, wherein said oscillator is a crystal plate.